IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): An optical amplifying method ~~in which at least one~~ of an optical amplifier ~~is~~ connected to an optical transmission line~~, an optical signal transmitted to said optical transmission line is amplified by said optical amplifier while an optical power of the optical signal on the optical transmission line is detected, and gain of the optical amplifier is controlled in response to an optical power of thus detected~~, the method comprising the steps of.

detecting an optical input and output power of said optical amplifier;

obtaining a difference between a measured gain of said optical amplifier and a target gain ~~on a basis of~~based on the detected optical input and output power to produce an error signal;

~~implementing~~ applying said error signal to each of a proportional calculation and an integral calculation to create respective proportional and integral control signals, and adding proportional and integral control signals to create ~~of said difference by an automatic constant gain control device to obtain~~ a drive current of at least one pump laser diode provided in said optical amplifier;

controlling the gain of said optical amplifier ~~by controlling current of said pump laser diode based on a calculated~~with the drive current ~~value~~; and

adjusting ~~control parameters of said automatic constant gain control device~~ a control parameter of the proportional calculator in response to ~~a detected result obtained by detecting the~~ the detected optical input power ~~to said optical amplifier, wherein~~

~~the drive current of said pump laser diode is obtained by the automatic constant gain control device with said control parameters adjusted~~.

Claim 2 (Canceled).

Claim 3 (Cancelled):

Claim 4 (Currently Amended): The optical amplifying method as claimed in claim 1, wherein said step of adjusting a control parameter includes adjusting a control parameter in response to a detected variation in optical input power resulting from adding or dropping an optical signal in a connected wavelength division multiplexing device~~in said step of adjusting said control parameters, said optical input power from a optical device connected with said optical amplifying apparatus or said optical input power varied by add/drop function of an optical signal of wavelength division multiplexing device in said optical device connected with said optical amplifying apparatus is detected, and the control parameters of said automatic constant gain control are adjusted in response to a detected result~~.

Claims 5-32 (Cancelled):

Claim 33 (New): An optical amplifier connected to an optical transmission line, comprising:

means for detecting an optical input and output power of said optical amplifier;

means for obtaining a difference between a measured gain of said optical amplifier and a target gain based on the detected optical input and output power to produce an error signal;

means for applying said error signal to each of a proportional calculation and an integral calculation to create respective proportional and integral control signals;

means for adding the proportional and integral control signals to create a drive current of at least one pump laser diode provided in said optical amplifier;

means for controlling the gain of said optical amplifier with the drive current; and

means for adjusting a control parameter of the proportional calculator in response to the detected optical input power.

Claim 34 (New): The optical amplifier as claimed in claim 33, wherein said means for adjusting a control parameter includes means for adjusting the control parameter in response to a detected variation in optical input power resulting from adding or dropping an optical signal in a connected wavelength division multiplexing device.

Claim 35 (New): An optical amplifier connected to an optical transmission line, comprising:

a detector configured to detect an optical input power of said optical amplifier;

a detector configured to detect an optical output power of said optical amplifier;

a difference calculator configured to calculate a difference between a measured gain of said optical amplifier and a target gain based on the detected optical input and output power to produce an error signal;

a proportional calculator and an integral calculator each configured to operate on said error signal to create respective proportional and integral control signals;

an adder configured to add the proportional and integral control signals to create a drive current of at least one pump laser diode provided in said optical amplifier;

a gain controller configured to control the gain of said optical amplifier with the drive current; and

a gain control adjuster configured to adjust a control parameter of the proportional calculator in response to the detected optical input power.

Claim 36 (New): The optical amplifier as claimed in claim 34, wherein said gain control adjuster includes an adjuster configured to adjust the control parameter in response to a detected variation in optical input power resulting from adding or dropping an optical signal in a connected wavelength division multiplexing device.

Claim 37 (New): An optical signal distribution system, comprising:

a first optical signal source;

the optical amplifier recited in one of Claims 35-36; and

an optical fiber connecting the optical signal source and the optical amplifier.

Claim 38 (New): The optical signal distribution system, further comprising:

a second optical source;

a wavelength division multiplexer connecting the first and second optical sources to the optical fiber.